

In the Claims:

Claims 1-12 are amended herein. Non-elected claims are canceled. The remaining claims are not amended in this response.

1. (currently amended) A heat-treatment apparatus, comprising a supporting means for supporting a workpiece turnably around a turning axis such that the workpiece can rotate freely about said turning axis in response to the application of an external force, and

a fixed induction-heating coil for induction-heating a belt zone, extending parallel to the turning axis, of the workpiece supported by the supporting means.

2. (currently amended) A heat-treatment apparatus, comprising a supporting means for supporting a workpiece turnably around a turning axis such that the workpiece can rotate freely about said turning axis in response to the application of an external force, and

an induction-heating coil opposed to a belt zone, extending parallel to the turning axis, of the workpiece supported by the supporting means.

3. (currently amended) A heat-treatment apparatus, comprising a supporting means for supporting a columnar workpiece to be turnable in a periphery direction around a turning axis extending in a length direction such that the workpiece can

rotate freely about said turning axis in response to the  
application of an external force, and

an induction-heating coil opposed to a belt zone, extending parallel to the turning axis, of a peripheral face of the workpiece supported by the supporting means.

4. (currently amended) A heat-treatment apparatus, comprising a rod-shaped supporting means for supporting a tubular workpiece, inserted into a hollow of the workpiece, to be turnable in a periphery direction around a turning axis extending in a length direction such that the workpiece can rotate freely about said turning axis in response to the application of an external force, and

an induction-heating coil opposed to a belt zone of a peripheral face of the workpiece and extending parallel to the turning axis of the workpiece supported by the supporting means.

5. (currently amended) The heat treatment apparatus according to any of claims 1 to 4, ~~wherein the supporting means supports a workpiece which is ferromagnetic at a temperature below the magnetic transformation point thereof and becomes paramagnetic at a temperature above the magnetic transformation point~~ the induction heating coil can produce over 20,000 watts of heat.

6. (currently amended) The heat treatment apparatus according to any of claims 1 to ~~5~~ 4, wherein the supporting means

is movable from a position for supporting the workpiece to another position to release the workpiece to fall, and is provided with a cooling tank containing a coolant below the workpiece supported by the supporting means.

7. (currently amended) The heat treatment apparatus according to any of claims 1 to ~~6~~4, wherein the induction-heating coil is constituted of a pair of partial coils placed in opposition on both sides of the workpiece.

8. (currently amended) The heat treatment apparatus according to any of claims 1 to ~~7~~4, wherein the induction-heating coil is in a rectangle shape, and

the supporting means is placed between a pair of long sides of the rectangle-shaped induction-heating coil, and supports the workpiece extending parallel to the pair of the long sides.

9. (currently amended) A heat-treatment apparatus, comprising

a ceramic supporting rod inserted in a hollow of a workpiece, ~~for supporting the workpiece helix member for supporting the helix member formed from a wire material which is transformed from ferromagnetic to paramagnetic by temperature elevation above the magnetic transformation point, to be turnable in the periphery direction of the helix member~~ workpiece, and

an induction-heating coil placed to face counterposed portions, on both sides of the supporting rod, of the peripheral

face of the ~~helix-member~~ workpiece supported by the supporting rod.

10. (currently amended) The heat treatment apparatus according to claims 9, wherein the induction-heating coil is constituted of a pair of partial coils placed in opposition on both sides of the ~~helix-member~~ workpiece.

11. (currently amended) The heat treatment apparatus according to claim 10, wherein the pair of the partial coils extend along the peripheral face of the ~~helix-member~~ workpiece in the length direction thereof, and

the supporting rod is placed between the pair of the partial coils, and extends parallel to the pair of the partial coils.

12. (currently amended) The heat treatment apparatus according to any of claims 9, 10, and 11, wherein the supporting rod is movable from a position for supporting the ~~helix-member~~ workpiece to another position to release the ~~helix-member~~ workpiece to fall, and is provided with a cooling tank containing a coolant below the ~~helix-member~~ workpiece supported by the supporting rod.

13. (canceled)

14. (canceled)

15. (canceled)

16. (canceled)

17. (canceled)

18. (original) A heat-treatment apparatus, comprising a ceramic supporting rod inserted in a hollow of a coil spring for supporting the coil spring formed from a wire material which is transformed from ferromagnetic to paramagnetic by temperature elevation above the magnetic transformation point to be turnable in the periphery direction of the coil spring, and

an induction-heating coil placed to face counterposed portions, on both sides of the supporting rod, of the peripheral face of the coil spring supported by the supporting rod.

19. (original) The heat treatment apparatus according to claims 18, wherein the induction-heating coil is constituted of a pair of partial coils placed in opposition on both sides of the coil spring.

20. (original) The heat treatment apparatus according to claim 19, wherein the pair of the partial coils extend along the peripheral face of the coil spring in the length direction thereof, and

the supporting rod is placed between the pair of the partial coils, and extends parallel to the pair of the partial coils.

21. (original) The heat treatment apparatus according to any of claims 18, 19, and 20, wherein the supporting rod is movable

from a position for supporting the helix member to another position to release the helix member to fall, and is provided with a cooling tank containing a coolant below the coil spring supported by the supporting rod.

22. (canceled)

23. (canceled)